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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,924	12/27/2000	John S. Clapp III	3731-114P	3478
30595	7590	01/02/2004	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195				NGUYEN, DANNY
ART UNIT		PAPER NUMBER		
		2836		

DATE MAILED: 01/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/747,924	CLAPP ET AL.
	Examiner	Art Unit
	Danny Nguyen	2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 07 October 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 2-4 and 6-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 2-4 and 19-22 is/are rejected.
- 7) Claim(s) 6-18 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) The translation of the foreign language provisional application has been received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 2-3, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Pinney (U.S. Patent No. 5,446,367).

Regarding to claims 19-22, 2-3, the admitted prior art discloses apparatus for limiting current comprises a circuit element (magneto-resistive circuit) to response to a bias current for generating an output voltage signal cross the circuit element; a first circuit (Q1) connected to one end of the circuit element for applying a bias current; and a second circuit (Q2) connected to the other end of the circuit element for setting the amplitude of output voltage signal (see admitted prior art, fig. 1), and the first circuit and second circuit are implemented in an integrated circuit (shown in fig. 1). The admitted prior art does not disclose a third electrical circuit for limiting the current as claimed.

Pinney disclose that a current limiter circuit (204) limits the bias current and is implemented in an integrated circuit (10). It would have been obvious to one of ordinary skill in the art to have modified the circuit of APA with the current limiter circuit as taught by Pinney in order to limit the bias current, and reduce input power supply to the integrated circuit (col. 6, lines 65-67).

Regarding to claim 4, the admitted prior art discloses that the output voltage across the magneto-resistive circuit comprises a differential voltage (V_{rmmr+} or V_{rmmr-}).

Allowable Subject Matter

2. Claims 6-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 6 recites, inter alia, an apparatus for limiting current in a magneto-resistive circuit includes the third electrical circuit including a third and fourth current control device, each having a pair of current conducting terminals and a current control terminal, the pairs of current conducting terminals of the third and fourth current control devices being connected in a cascade circuit connection between the first and second bias voltage supply sources, the current control terminal of the third current control device being connected with the output signal of the first signal amplifier also applied to the control terminal of the first current control device, and, a third signal amplifier circuit responsive to a signal corresponding to a current flowing between the third and fourth current control devices for applying an output signal to the control terminal of the second current device along with the output signal of the second signal amplifier for clamping the control terminal of the second current control to a voltage corresponding to the output signal of the third signal amplifier in the event a short circuit condition occurs in the circuit element.

The references of record do not teach or suggest the aforementioned limitation, nor would it be obvious to modify those references to include such limitation.

Claims 7-18 are objected because they depend on claim 6.

Conclusion

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Nguyen whose telephone number is (703)-305-5988. The examiner can normally be reached on Mon to Fri 8:00 AM to 4:30 PM.

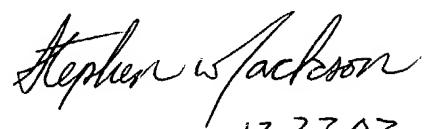
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (703)-308-3119. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-872-9318 for regular communications and (703)-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.

DN

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December 18, 2003



12-23-03

STEPHEN W. JACKSON
PRIMARY EXAMINER